

WE CLAIM:

1. An isolated nucleic acid molecule encoding a teneurin c-terminal associated peptide consisting of:
 - (a) a nucleic acid sequence as shown in SEQ.ID.NOS.: 18-20, 25-28, 33-36, 41-44, 49-52, 57-60, 65-68, 73-76, 81-84, 89-92, 97-100 or that wherein T can also be U or that encodes a peptide having an amino acid sequence selected from the group consisting of : SEQ. ID. NOS: 13, 14, 21, 22, 29, 30, 37, 38, 45, 46, 53, 54, 61, 62, 69, 70, 77, 78, 85, 86, 93, 94, 101, 103 or that further has an amidation signal sequence, at the carboxy terminus of said peptides, or has SEQ. ID. NO. 15, 16, 23, 24, 31, 32, 39, 40, 47, 48, 55, 56, 63, 64, 71, 72, 79, 80, 97, 88, 95, 96;
 - (b) a nucleic acid sequence that is complimentary to a nucleic acid sequence of (a);
 - (c) a nucleic acid sequence that has substantial sequence homology to a nucleic acid sequence of (a) or (b);
 - (d) a nucleic acid sequence that is an analog of a nucleic acid sequence of (a), (b) or (c); or
 - (e) a nucleic acid sequence that hybridizes to a nucleic acid sequence of (a), (b), (c) or (d) under stringent hybridization conditions.
2. A isolated nucleic acid molecule of claim 1 wherein the amidation signal sequence is GKR or GRR.
3. A nucleic acid molecule of claim 2 wherein the sequence is selected from the group of sequences consisting of SEQ. ID. NOS:15, 16, 23, 24, 31, 32, 39, 40, 47, 48, 55, 56, 63, 64, 71, 72, 79, 80, 97, 88, 95, 96.

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4. An isolated nucleic acid molecule encoding a TCAP peptide wherein the peptide has neuronal communication activity and/or stress modulation activity and/or cell proliferation inhibition activity.
- 5 5. An antisense oligonucleotide that is complimentary to a nucleic acid sequence according to claims 1 to 4.
6. An expression vector comprising a nucleic acid molecule of any one of claims 1 to 5.
- 10 7. A host cell transformed with an expression vector of claim 6.
8. An isolated teneurin c-terminal associated peptide which has the amino acid sequence as shown in SEQ. ID. NOS: 13, 14, 21, 22, 29, 30, 37,
15 38, 45, 46, 53, 54, 61, 62, 69, 70, 77, 78, 85, 86, 93, 94, 101, 103 or a fragment, analog, homolog, derivative or mimetic thereof or a biologically active fragment thereof.
9. An isolated teneurin c-terminal associated peptide of claim 8 further
20 comprising an amidation signal sequence at the carboxy terminus.
10. A teneurin c-terminal associated peptide according to claim 8 or 9 wherein the peptide has anxiogenic activity.
- 25 11. An antibody that can bind a peptide according to any one of claims 8 to 10 .
12. A method of identifying substances which can bind with a teneurin c-terminal associated peptide, comprising the steps of:
30 (a) incubating a teneurin c-terminal associated peptide and a test substance, under conditions which allow for formation of a

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complex between the teneurin c-terminal associated peptide and the test substance, and

- (b) assaying for complexes of the teneurin c-terminal associated peptide and the test substance, for free substance or for non complexed teneurin c-terminal associated peptide, wherein the presence of complexes or reduced levels as compared to a starting level of free substance or non-complexed teneurin c-terminal associated peptide indicates that the test substance is capable of binding to the teneurin c-terminal associated peptide.

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13. A method for identifying a compound that affects the activity or expression of teneurin c-terminal associated peptide comprising:

- (a) incubating a test compound with a teneurin c-terminal associated peptide or a nucleic acid encoding a teneurin c-terminal associated peptide; and

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- (b) determining an amount of teneurin c-terminal associated peptide protein activity or expression and comparing with a control, wherein a change in the TCAP peptide activity or expression as compared to the control indicates that the test compound has an effect on TCAP peptide activity or expression.

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14. The method of claim 13 wherein in step(a) a test compound is incubated with a teneurin c-terminal associated peptide and teneurin c-terminal associated peptide substrate under conditions that permit interaction of the peptide and substrate, and step(b) and in step(b) the peptide activity on the substrate is determined.

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15. The method of claim 13, wherein in step (a) a cell expressing a teneurin c-terminal associated peptide and activity, is incubated with a test compound, under conditions where teneurin c-terminal associated peptide is active and in step (b) teneurin c-terminal associated peptide activity is determined.

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16. The method of claim 15, wherein the teneurin c-terminal associated peptide activity is determined by detecting the levels of cAMP and cGMP before and after incubation with the test compound, or as compared to a control, wherein a change in magnitude of levels of cAMP or cGMP as compared to a baseline or control level is indicative that the test compound is a modulator of teneurin c-terminal associated peptide activity.
17. The method of claim 16, wherein the reduction of cAMP or cGMP in the presence of a test compound is less than in the control or baseline level or is greater than in the control or baseline level of TCAP activity indicates that the test compound is an inhibitor of c-teneurin associated peptide activity.
18. A method of identifying a compound that affects the regulation of neuronal growth comprising:
- (a) incubating a test compound with a teneurin c-terminal associated peptide or a nucleic acid encoding a teneurin c-terminal associated peptide; and
 - (b) determining an amount of teneurin c-terminal associated peptide protein activity or expression and comparing with a control, wherein a change in the TCAP peptide activity or expression as compared to the control indicates that the test compound has an effect on the regulation of neuronal growth.
19. A method of inhibiting cell proliferation comprising administering to a cell, an effective amount of teneurin c-terminal associated peptide that inhibits cell proliferation.
20. A method according to claim 19 wherein the cell is selected from the group consisting of neuronal or fibroblast cells.

21. A method of detecting a condition associated with the aberrant regulation of neuronal growth comprising assaying a sample for (a) a nucleic acid molecule encoding a teneurin c-terminal associated peptide or a fragment thereof or (b) a teneurin c-terminal associated peptide or a fragment thereof.
22. A method of treating a condition associated with the aberrant regulation of neuronal growth comprising administering to a cell or animal in need thereof, an effective amount of a teneurin c-terminal associated peptide or an agent that modulates teneurin c-terminal associated peptide expression and/or activity.
23. A method according to claim 22 wherein the agent is selected from the group consisting of: a nucleic acid molecule encoding teneurin c-terminal associated peptide; teneurin c-terminal associated peptide as well as fragments, analogs, derivatives or homologs thereof; antibodies; antisense nucleic acids; peptide mimetics; and substances isolated using the screening methods described in claims 12- 20.
24. A method of inducing an angiogenic response in a subject comprising administering to a subject an effective amount of teneurin c-terminal associated peptide to induce an angiogenic response.
25. A method of inhibiting an angiogenic response in a subject comprising administering to a subject an effective amount of an inhibitor of teneurin c-terminal associated peptide to inhibit an angiogenic response.
26. A method of claim 25 wherein the inhibitor is identified according to the method of anyone of claims 13 to 18.

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27. A method of inhibiting the damage caused by physiological stresses comprising administering to a cell, an effective amount of teneurin c-terminal associated peptide that protects cells from the physiological stresses.
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28. A method of modulating the stress response in an animal comprising administering an effective amount of TCAP to said animal.
29. A method of modulating anxiety response in an animal comprising administering an effective amount of TCAP to said animal.
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30. The method of increasing anxiety in a low anxiety animal comprising administering to said animal an effective amount of TCAP.
- 15 31. A method of decreasing anxiety in a high anxiety animal comprising administering to said animal an effective amount of TCAP.
32. A method of normalizing anxiety response in an animal comprising administering to said animal an effective amount of TCAP.
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33. A method of treating cancer in an animal comprising administering an effective amount of TCAP to said animal.
34. A pharmaceutical composition comprising TCAP and a pharmaceutically acceptable vehicle.
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